

REMARKS

Reconsideration of the rejections set forth in the Office action mailed January 8, 2004 is respectfully requested. Claims 8-14 were cancelled in the response to restriction requirement filed July 2, 2003. Claims 1-7 and 15-16 are currently pending.

I. Amendments

Claim 15 has been amended to incorporate from claim 16 the condition that each of x_1 through x_{n-1} is an integer selected from the group consisting of 0, 1, and 2. Accordingly, the claim is also amended to recite that at least one of x_1 through x_{n-1} is 1 or 2 (rather than 1, 2, 3, or 4). Support is found in original claim 16 and in the specification at, for example, page 11, lines 16-22 and page 4, lines 6-7.

Claim 5 is amended to correct a typographical error.

No new matter is added by any of the amendments.

II. Rejections under 35 U.S.C. §102(b)

Claims 15-16 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,604,097 (Brenner). This rejection is respectfully traversed for the following reasons.

A. The Invention

The applicant's invention, as embodied in claim 15, provides a repertoire of cloning vectors for attaching oligonucleotide tags to polynucleotides, wherein each of the vectors comprises a double stranded element corresponding to an oligonucleotide tag of the form:

$$w_1(N)_{x_1} w_2(N)_{x_2} \dots (N)_{x_{n-1}} w_n$$

wherein

each of w_1 through w_n is a word consisting of an oligonucleotide having a length from three to fourteen nucleotides or basepairs and being selected from the same minimally cross hybridizing set, wherein a word of the set and a complement of any other word of the set has at

least two mismatches;

N is a nucleotide;

each of x_1 through x_{n-1} is an integer selected from the group consisting of 0, 1, and 2,

provided that at least one of x_1 through x_{n-1} is 1 or 2; and

n is an integer in the range of from 4 to 10.

In the oligonucleotide tags shown in the claim, "at least two words...are separated by one or two nucleotides" (page 4, lines 6-7).

Such tags can be produced, for example, by the method described on pages 11-12 and illustrated in Fig. 1A, where the length of "(N) k " is "the length of the protruding strand resulting from cleavage with the preferred type of IIs restriction endonucleases" (page 11, lines 21-23).

B. The Prior Art

The cited reference shows, at the location pointed out by the Examiner (Example I, columns 23-24) a pUC-19 vector into which each of three double stranded oligonucleotide tags (designated Tag 1, Tag 2, and Tag 3) are ligated to form pUC-19-1, pUC-19-2, and pUC-19-3, respectively. The reference notes that, in Tag 1, Tag 2, and Tag 3, "the w_i 's represent the subunits define [sic] in Table I, and the terms "(*)" represent their respective complements" (column 24, lines 7-9). Table I of the patent (column 7) shows a series of four-nucleotide subunits.

Accordingly, the tags ligated into the vector pUc-19 consist of four-nucleotide subunits ("words") linked directly to each other, with end groups for ligating into the vector. There is no teaching of vectors containing oligonucleotide tags as claimed, which include at least one element $(N)_{x_n}$, x_n being 1 or 2, separating at least one pair of "words".

Applicants also note that the stated length of a "word" in the cited reference is "3 to 6 nucleotides" (e.g. Abstract; column 3, lines 16-18). Accordingly, even if "words" different from those shown in Table I were used to construct tags for insertion into the vector, the "words" in a tag would never be separated by 1- or 2-nucleotide moieties.

Since the reference does not disclose all of the elements set out above in claims 15-16, the claims cannot be anticipated by this reference under 35 U.S.C. §102(b). In view of this, the applicant respectfully requests the Examiner to withdraw the rejection under 35 U.S.C. §102(b).

III. Rejections under 35 U.S.C. §102(b)/103(a)

Claims 15-16 were rejected under 35 U.S.C. §103(a) as being anticipated by, or, in the alternative, obvious over the Stratagene Catalog, p. 27 (1993). The rejections are respectfully traversed in light of the following remarks.

By citing commercially provided vectors, containing, for example, various polylinkers, promoters, and selection regions, the Examiner appears to suggest that essentially any oligonucleotide would include the recited features of the oligonucleotide tags of the claim. The Examiner asserts that "these limitations" simply "relate to how the repertoire of cloning vectors are to be made". The applicants respond that the limitations are in fact structural limitations which distinguish the tags of the claims from the essentially random collection of oligonucleotides in the cited structures.

One such limitation is that "each of w_1 through w_n is a word consisting of an oligonucleotide having a length from three to fourteen nucleotides or basepairs and being selected from the same minimally cross hybridizing set, wherein a word of the set and a complement of any other word of the set has at least two mismatches". This is clearly a structural requirement, and not just a description of how the oligonucleotide tag is made. One would not expect any random oligonucleotide, including those in the cited vectors, to exhibit this feature. For this to be the case, one would have to be able to divide any such oligonucleotide into a plurality of subunits of a given length, such that any subunit would have at least two mismatches with the complement of any other subunit.

In accordance with a further structural feature, at least two such "words" in the oligonucleotide would have to be "separated by one or two nucleotides" (as described above).

There is no evidence or suggestion in the cited reference that the oligonucleotides contained in the vectors have the claimed structural features. Accordingly, the applicants request that the rejection be withdrawn.

IV. Allowable Subject Matter

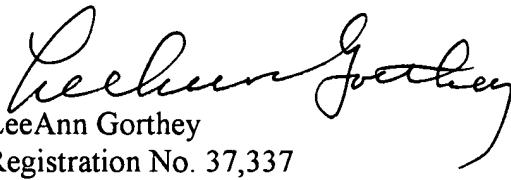
Claims 1-7 were found to be allowable over the prior art of record.

V. Conclusion

In view of the foregoing, the applicant submits that the claims now pending are now in condition for allowance. A Notice of Allowance is, therefore, respectfully requested.

Respectfully submitted,

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